Digital Video Commander Administrator's Manual

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Introduction

Digital Video Commander is a system to capture, store, retrieve and play back audiovisual material. It is intended to be used in a situation where there are large numbers of end users.

This manual covers the use of the DVC Administration Tool. This is a software application which runs under Windows 2000 or later. With it, the A/V administrator can manage the acquisition and storage of audiovisual material and control who has access to that material.

Table of Contents

INTRODUCTION **2**

TABLE OF CONTENTS **3**

1 OVERVIEW OF THE DVC SYSTEM **4**

1.1 ACQUISITION 4
1.2 STORAGE AND MANAGEMENT 4
1.3 REPLAY 4

2 ADMINISTRATION **5**

3 ORGANISING STORED MATERIAL **7**

3.1.1 Legend of icons used in the files screen *8*
3.2 BASIC FILE OPERATIONS 8
3.3 FILE PROPERTIES 8
3.3.1 Meta-data *8*
3.3.2 Group Membership *10*
3.4 DELETED FILES 10
3.5 IMPORTING MATERIAL 11
3.6 EXPORTING MATERIAL 11
3.7 CONFIGURING META-DATA 12

4 CAPTURING MATERIAL **13**

4.1 CAPTURING FROM OFF-AIR TV 13
4.2 LIVE PREVIEW OF A CAPTURE DEVICE 16
4.3 CAPTURING FROM VHS OR OTHER LOCAL ANALOGUE SOURCES 16
4.4 MONITORING THE STATE OF TIMER RECORDINGS 17
4.5 CHANGING A TIMER RECORDING 18
4.6 CANCELLING A TIMER RECORDING 18

5 CONTROLLING ACCESS TO MATERIAL **19**

6 MONITORING USAGE OF THE SYSTEM **22**

APPENDIX A. DOCUMENT REVISION HISTORY **23**

APPENDIX B. RECORDING QUALITY AND STORAGE **24**

APPENDIX C. GLOSSARY **25**

1 Overview of the DVC system

The parts of the DVC system are:

1. **Acquisition** for obtaining new A/V material
2. **Storage and Management** for keeping track of the material
3. **Replay** for viewing the material

The following sections provide more detail.

1.1 Acquisition

Digital media may be obtained from:

1. Built in TV tuner
2. External analogue source (eg. VHS player or video camera)
3. Built in Digital TV receiver
4. User-supplied media files
5. Material downloaded from the DVC Marcom Digital media library

1.2 Storage and Management

Media files may be organized into folders, much the same way as you organize files on your PC. In the same way, files can be copied, moved, renamed and deleted.

In addition, each file can be tagged with **Meta-data**.

Files can also be assigned access restrictions to allow or prevent certain people from accessing them.

1.3 Replay

Media files can be viewed either on a PC using **DVC Player** or they can be viewed on a TV, Plasma or Video Projector using a **Set Top Box**.

2 Administration

The Administration Tool is the software to accomplish all the tasks mentioned in the introduction. Figure 1 shows what it looks like when you first start it up.

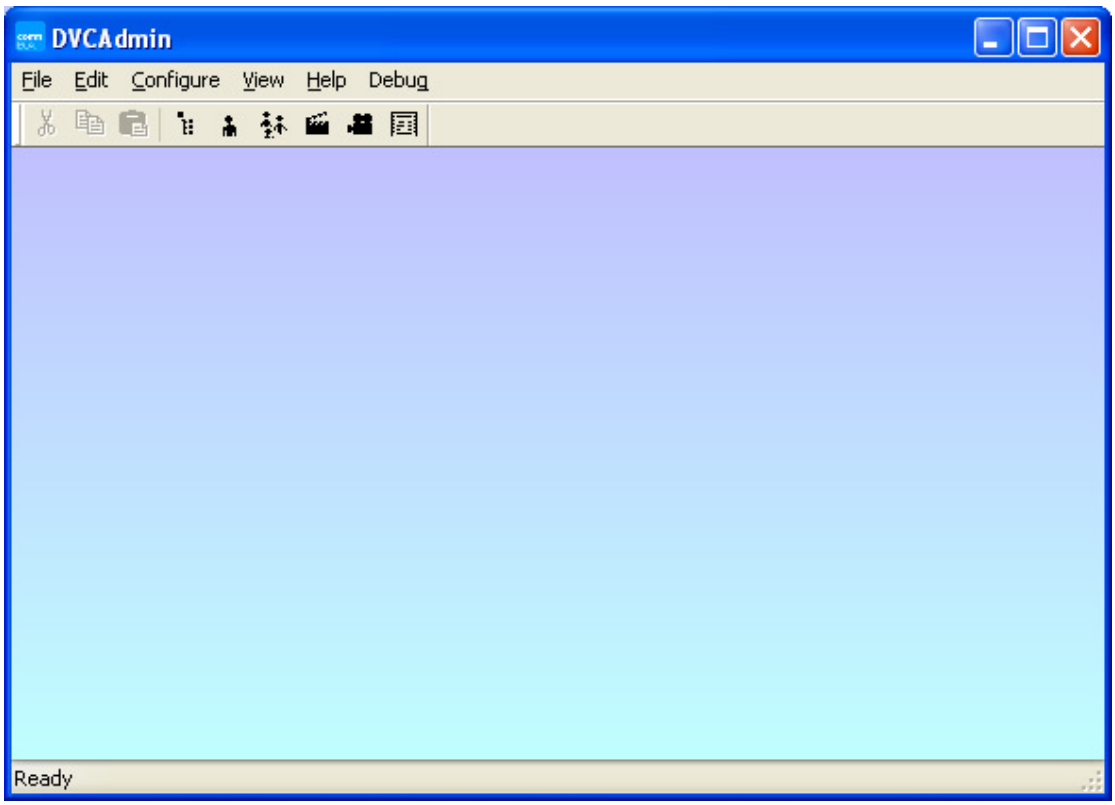


Figure 1 - The Administration Tool

The Administration tool works on the concept of **Screens**. Each screen is relevant to a specific task. The screens are:

Screen	Refer to	Purpose
Files	Section 3	Organise the storage of material
Capture	Section 4	Acquire new material from an analogue source or TV channel
Users	Section 5	Add users and passwords to the system
Groups	Section 5	Control which users have access to which material
Editor	n/a	Simple editing of video material. This is not available in the current version.
Logs	Section 6	Monitor who has been using the system

The **tool bar** contains a number of symbols which are used for opening and closing the screens. Click a symbol to open that screen and click it again to close the screen. Screens may also be opened and closed from the **View** menu.

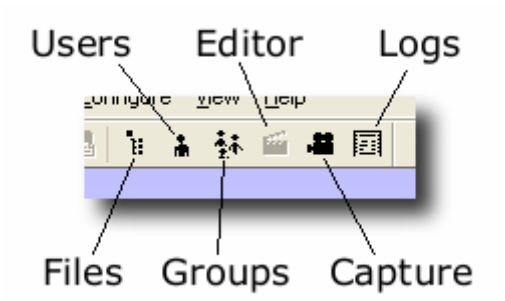


Figure 2 - The tool bar makes opening screens easy

3 Organising Stored Material

The **Files Screen** is used to manage the storage of audiovisual material. As you can see in Figure 3, it looks similar to Windows Explorer.

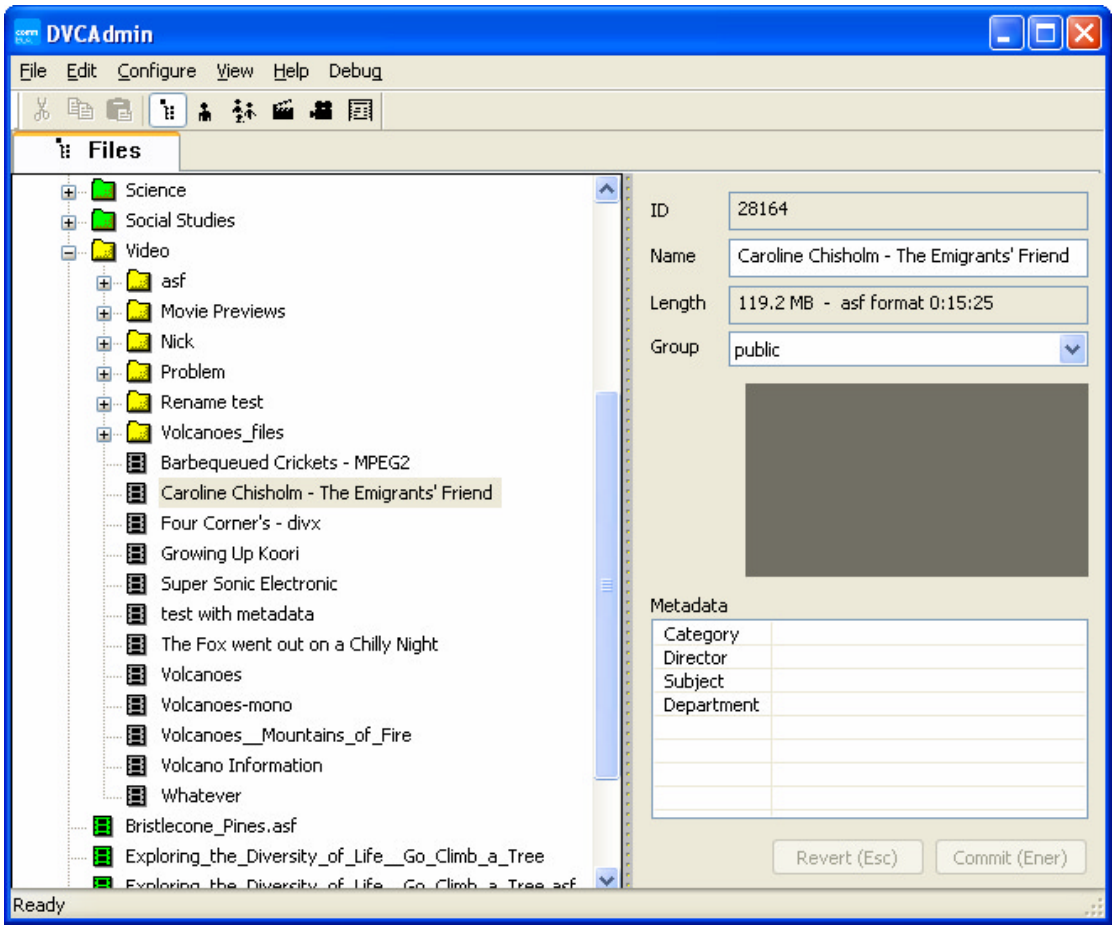


Figure 3 - The Files Screen

When you open the files screen, you will see a list of files and folders. Clicking the small "+" sign next to each folder will open it and you will see a list of its contents.

The files screen is for arranging your files. This tree structure is what the end user sees when using the BROWSE function of the set top box. We recommend that you name the folders by category and subcategory.

3.1.1 Legend of icons used in the files screen

Symbol	Description
	Folder which contains your files
	A file which you have put in the system
	Folder which contains DVC Marcom content library files (it might also contain some of your own files)
	A file which is part of the DVC Marcom content library and also exists on your local system
	A file which exists in the DVC Marcom content library but is not stored on your local system

3.2 Basic File operations

You can **move files or folders** around by simply dragging them.

To **copy files or folders**, drag them with your right mousebutton and select COPY from the menu after you have released the mousebutton. Dragging the item while holding down the Ctrl key will also perform a copy.

Deleting a file or folder can be done by highlighting it and pressing the **Del** key on your keyboard. There is also a Delete option in the pop up menu if you right-click an item.

3.3 File Properties

At the right hand side of the Files screen is the properties screen. This gives information on the currently selected file.

You can use the properties screen to rename a programme, change its group membership or its meta-data.

If you change any of these fields, you will need to click the "Commit" button to enter that new information into the database.

3.3.1 Meta-data

Meta-data are extra fields which can be associated with a media item. Meta-data is optional and you may leave the fields blank if you do not wish to use them.

Meta-data fields are defined by you to suit your own system. See section 3.7 to find out how to configure the number and type of meta-data fields in your system.

Meta-data can be used by the end user to search for material. For example, if you have a meta-data item called “Director”, the user could type in “Gilliam” and get a list of all films directed by Terry Gilliam. It is up to you what meta-data items you want to define.

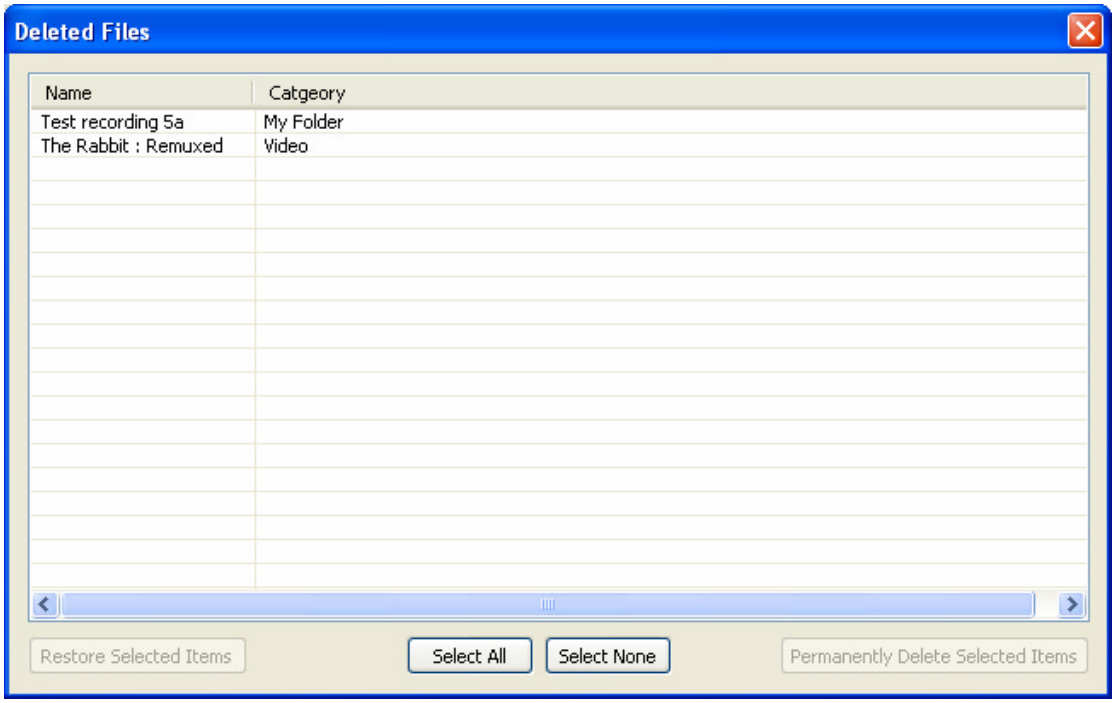
3.3.2 Group Membership

Each file can be attached to a group. This indicates which users are allowed to access the file. See section 5 for more information about group access control.

3.4 Deleted Files

When you delete a file, it may be recovered using the **Deleted Items** window. This operates in a similar fashion to the Trash or Recycle Bin facility on your PC.

This window may be opened by selecting **Deleted Items** from the **File** menu.

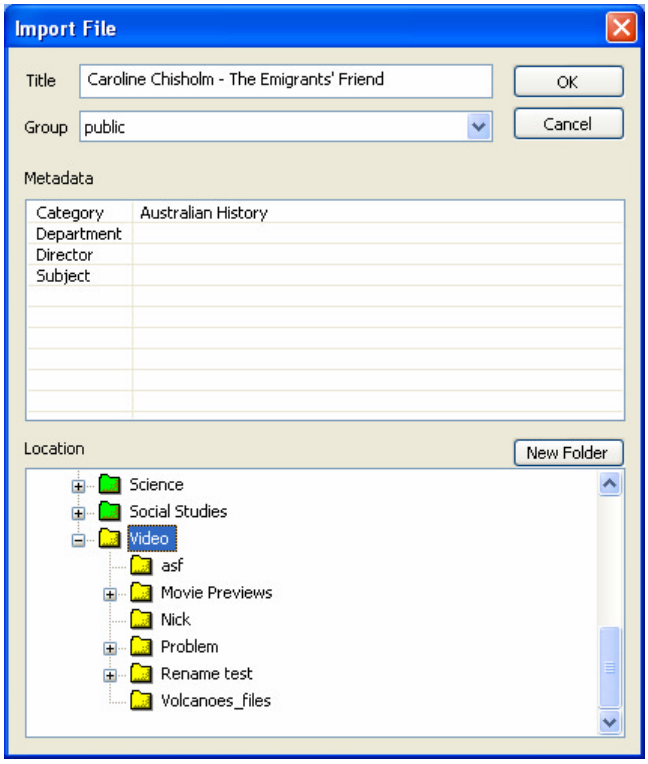


If you want to recover deleted files, highlight them and click **Restore Selected Items.** You can hold down the Ctrl key if you want to select multiple items.

If you are low on disk space and want to get rid of these deleted files, highlight the files to be destroyed and click the **Permanently Delete Selected Items** button.

Note that files which have been permanently deleted can never be recovered so take care when using this facility.

3.5 Importing material



One important task you will perform with the files screen is importing video files. You will use this in the case you have an MPEG file or similar which you may have downloaded from the internet, extracted from a DVD or created with a video camera or video editing software.

The easiest way to import a video file is to right-click on the folder where you want to put the file and choose "Import file here" from the pop-up menu. The software will then prompt you to choose a file from your local hard drive.

Once you have chosen a file to import, you are given an opportunity to enter meta-data for it. Meta-data is optional, you may leave the fields blank if you wish.

Once you click OK, the software will then copy the file to the media repository. You can monitor the progress of the import operation by opening the **Task Status Window** which is accessible via the Window menu.

3.6 Exporting material

You can also get media out of the DVC system by using the export facility. Simply right-click on the file you want to export and choose **export** from the pop-up menu.

The system will then prompt you to choose a location to store the exported file.

NOTE: When a file is exported, the file's meta-data is not exported with it.

3.7 Configuring Meta-data

Meta-data can be used to help organise and search for material. Each file can have meta-data attached to it. The names of the meta-data fields are up to you, use the Meta-data Configuration window (accessible via the Configuration menu) to set up the field names you would like.

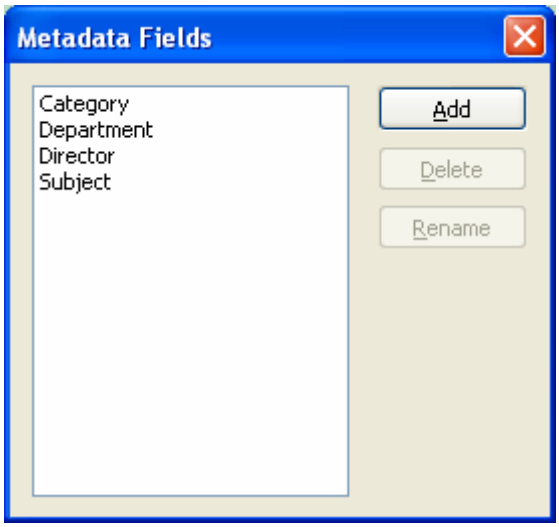


Figure 4 - Window to set up Meta-data

NOTE: Be careful when deleting fields as all data associated with that field will be lost.

4 Capturing Material

Video programmes are captured from analogue sources such as VHS tape or a TV tuner, copied from other video servers or obtained by the administrator using other means such as downloading from the Internet.

This section of the manual describes capturing from analogue sources and broadcast TV. For information on importing video files, see section 3.5.

The system will be configured with a number of capture devices.

4.1 Capturing from off-air TV

Capturing from TV programmes is done using **timer recordings**. A useful tool is the **Timeline** which can be seen on the Capture Screen. Select **Capture** from the **View** menu to see the Timeline. You should see something like Figure 5.

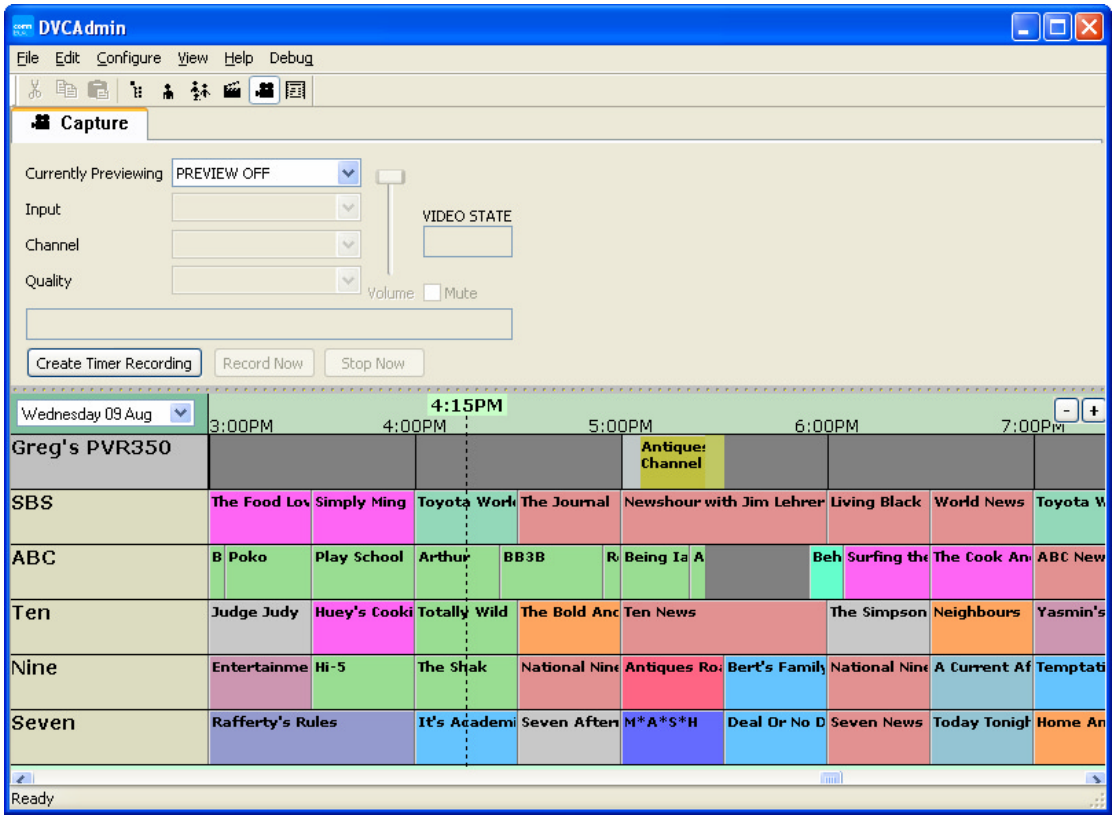


Figure 5 - Capture screen showing the timeline

The timeline shows each capture device you have with a grey title at the left.

Underneath the capture device timelines are the TV guide timelines. These have a beige title at the left.

To record a programme off-air, simply double-click on a TV guide item. If you want to record a programme which is not listed in the TV guide, press the button marked **Create Timer Recording**. This will open the Timer Recording window as shown in Figure 6.

> TIP: You can also create a new recording by clicking on a blank space in the timeline.

If you have entered details which are acceptable to the system, the **OK** button will become enabled and you can enter the recording into the system by clicking it.

If there is any problem with the details you entered (such as a clash with another timer recording), a message will appear in red text to inform you of that fact. Once you have corrected the problem, the red text will disappear.

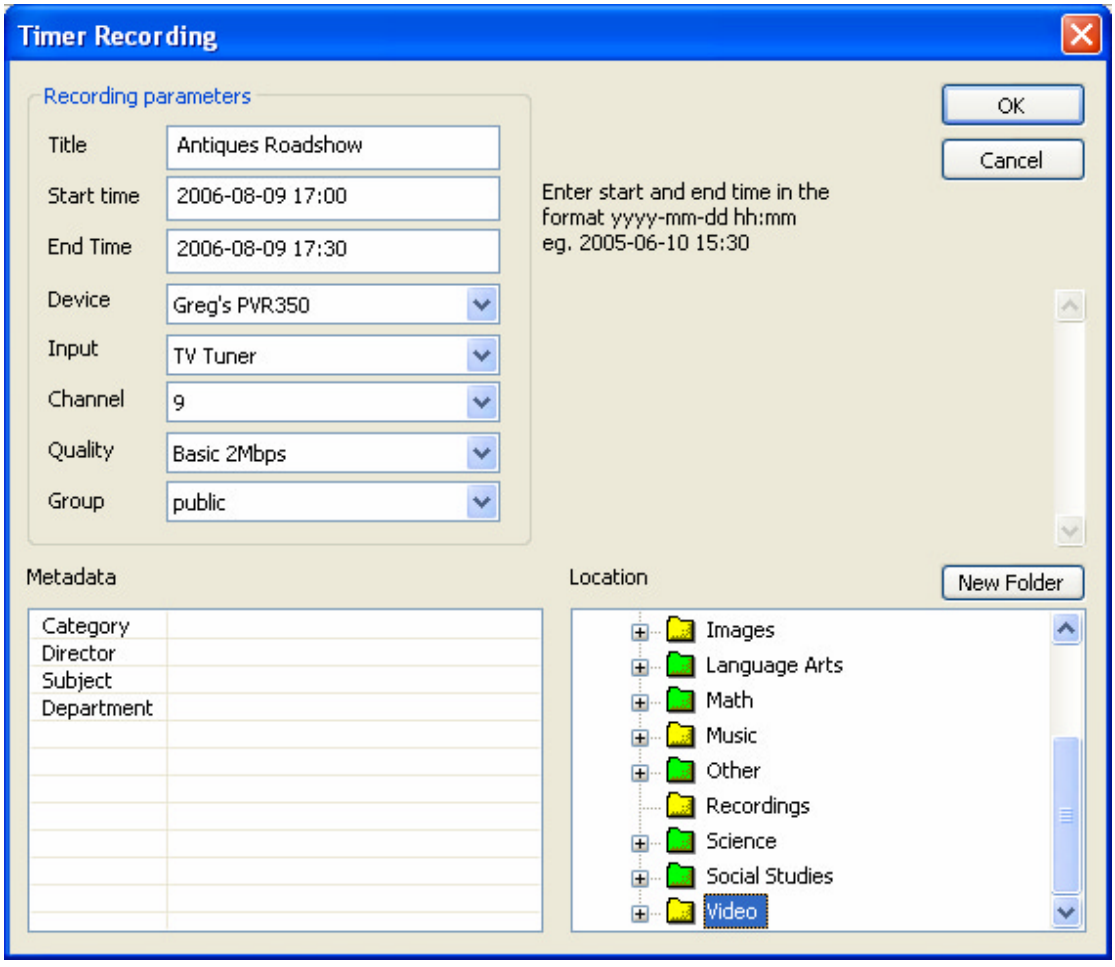


Figure 6 - The Timer Recording Window

The fields in the timer recording window are:

Title	This is the name of the programme you will be recording.
Start time and **End time**	These indicate when recording will start and stop. They must be entered in the format YYYY-MM-DD HH:MM.
Device	This indicates which capture card will be used to make the recording. Choose a free device.
Input	If the capture device has multiple inputs, choose which one you would like to use. Typically, there would only be two choices, TV or Composite input.
Channel	If you selected TV as your input, you will be given a list of TV channels to select from.
Quality	Some capture devices will have the option to record at different levels of picture quality. A higher quality recording will look better but use up more disk space. See Appendix B for more information.
Group	This sets which security group the programme will belong to. See section 5 to find out more about access restrictions and security. Select **public** if you want the programme to be viewable to all users of the system.
Metadata	These are optional fields which are useful for categorising and searching for files. See section 3.7 to see how you can set the field names up.
Location	This tells the system where you would like to store the file after is has finished recording. Use the little **+** symbols to open up folders on your media repository and select the destination folder.

Once you have created a timer recording, it will appear in the timeline. If you need to modify the details, simply double-click on it as described in section 4.5.

4.2 Live Preview of a capture device

Select an item from **Currently Previewing** drop-down list. A window will appear at the right which shows what that capture device is seeing right now. This is useful for monitoring recordings.

You can use the other drop-down lists to control the various aspects of the selected capture device. Typical controls are:

Input Select	Choose between tuners or line inputs
Channel	Select a TV channel
Quality	Select the quality preset for the digital encoder

You can enlarge the preview window by dragging the horizontal split bar up and down. The split bar is just beneath the preview window.

4.3 Capturing from VHS or other local analogue sources

Select an analogue input card from the **Currently Previewing** drop-down list. If the card is available for recording, the **Record Now** button will become active.

Select the line input from the **Input** drop-down list. Make sure your analogue source is plugged into the appropriate analogue input.

Once you have cued up your analogue replay, click the **Record Now** button and start your replay. Note that it will take a couple of seconds for it to actually start recording.

When the show is finished, simply click the **Stop Now** button. The new recording will be automatically placed in the Recordings folder and will be named something like "Manual Recording 2439".

> Note that the administration tool must remain open during the entire recording. If the administration tool is closed, the manual recording will stop a couple of minutes later.

> TIP: It is a good idea to start your tape five to ten seconds before starting to record on DVC to allow some time for the video signal to stabilise.

4.4 Monitoring the state of timer recordings

The timeline gives you a rough idea of what is happening. You can also see the current status of recordings using the **Transcode and Capture Status window**. This window may be opened using the **View** menu.

As you can see in Figure 7, this window shows all current and future timer recordings and you can see at a glance which recordings are taking place.

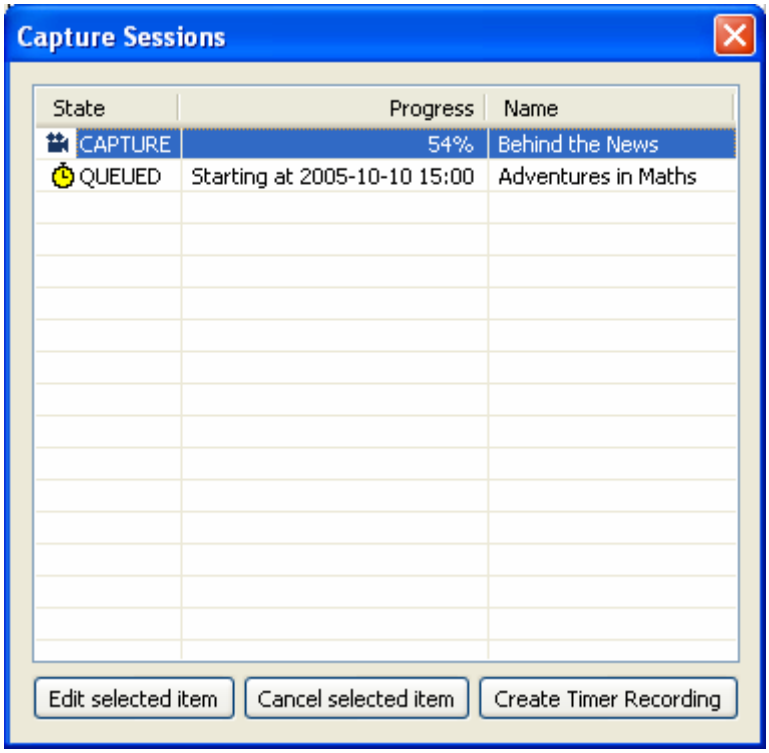


Figure 7 - The Capture Status Window

4.5 Changing a timer recording

You may edit an existing timer recording by double-clicking it in the timeline or by using the "Edit Selected Item" button in the Capture Status window.

When you edit a timer recording, the timer recording window as shown in Figure 6 will appear. Simply modify the fields and click OK.

4.6 Cancelling a timer recording

There are two ways to delete a timer recording:

1. Right-click on the recording in the timeline and select **Delete** from the pop-up menu.
2. Select the recording in the **Capture Status** window and click the **Cancel Selected Item** button.

NOTE: If you delete a timer recording while it is in progress, the partially recorded file will be deleted from the system.

NOTE: If you delete a timer recording which has completed, the recorded file will remain on the system.

5 Controlling Access to Material

Access to material is based around the concept of **groups**. Groups are defined by the A/V Operator and are given names such as 'Adult' or 'Staff only'.

Each programme in the system may assigned to a group. Users can be members of one or more groups.

Programmes with no group assigned are considered **public** and may be viewed by anyone.

Programmes which have a group assigned may only be viewed if the logged in user is also a member of that group.

The Administration tool can perform the following group-related tasks via the groups and users screens:

- Create a new group
- Assign members to a group
- Change the group name and membership list
- Delete groups

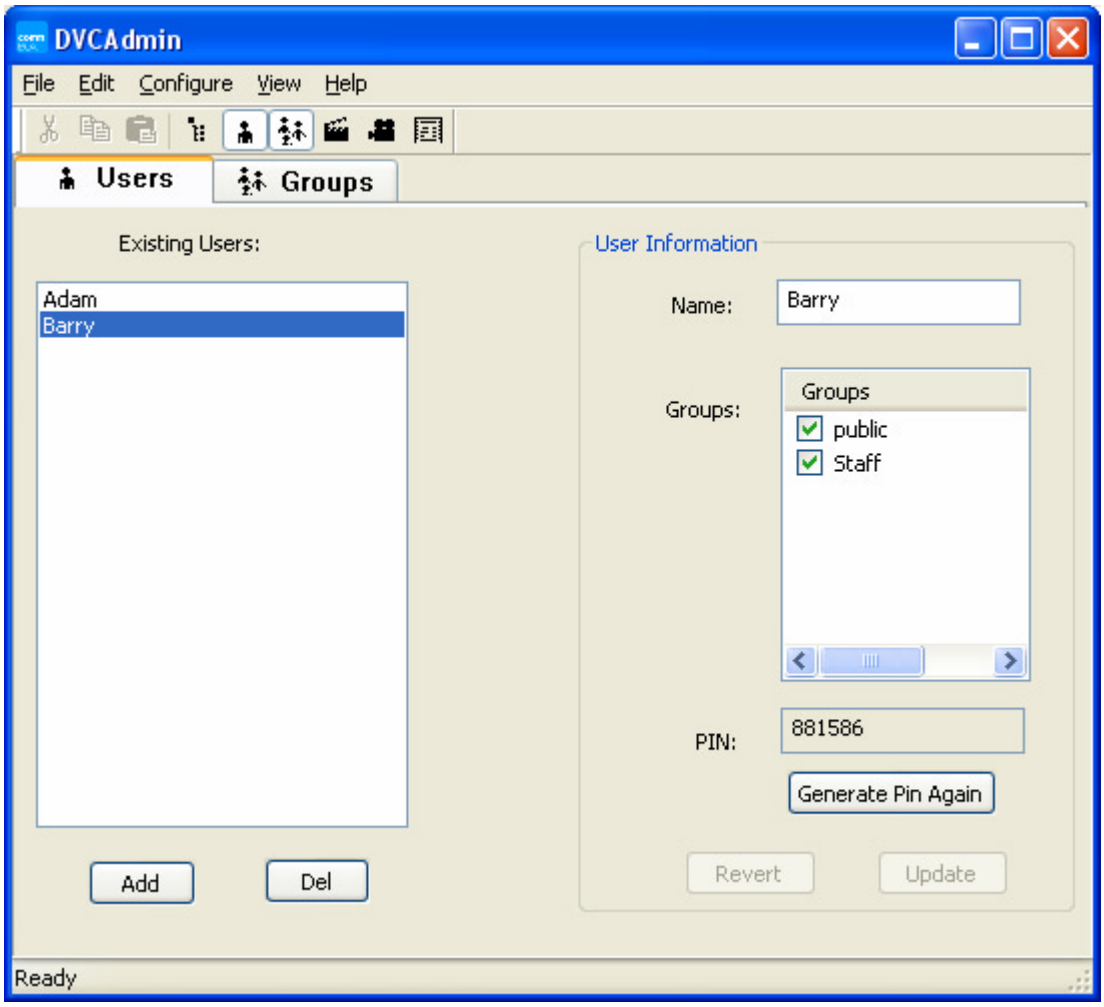


Figure 8 - The Users Screen

The **Users Screen** is shown in Figure 8 and can be used to manage the users of the system.

The left-hand list shows all the users in the system. Use the **Add** and **Del** buttons to create and remove users.

When a user is selected, the details for that user will appear on the right side of the window. If you make any modification to the details, you will need to click the **Update** button before those changes will be saved to the database.

Each user has a PIN number which is needed to log in. This number is generated randomly by DVC and it is guaranteed that no two PIN numbers will be the same. This way, a user may log in using a PIN number only without the need to also type a user name.

You can assign a user to a group, or multiple groups by ticking the boxes. Don't forget to click Update after you have made any changes.

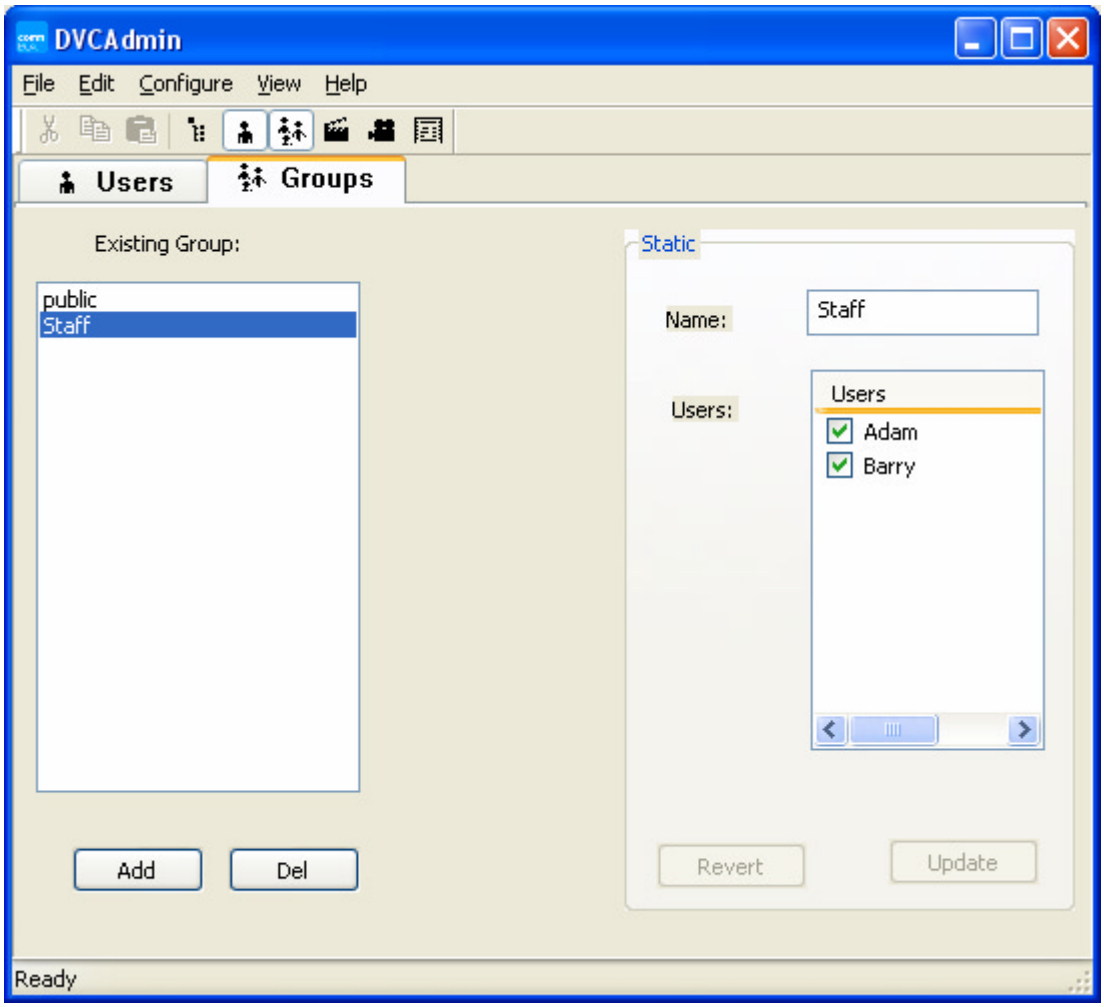


Figure 9 - The Groups Screen

The Groups Screen is shown in Figure 9. It can be used to manage the groups in the system. Each piece of media stored by DVC is assigned to one and only one group. By manipulating the member lists of each group, you can control who can view each item.

The available groups are shown in the left hand list. Use the **Add** and **Del** buttons to create or remove groups.

When a group is selected in the list, it's details appear on the right of the window. If you make any change to these details, you must click the **Update** button to save those changes to the database.

You can manipulate the membership of a group by ticking the names in the list box.

6 Monitoring Usage of the system

Figure 10 shows the **Logs Screen** which can be used to monitor the usage of the system. It shows each video replay along with the start time and the name of the person who viewed it (if the person was logged in).

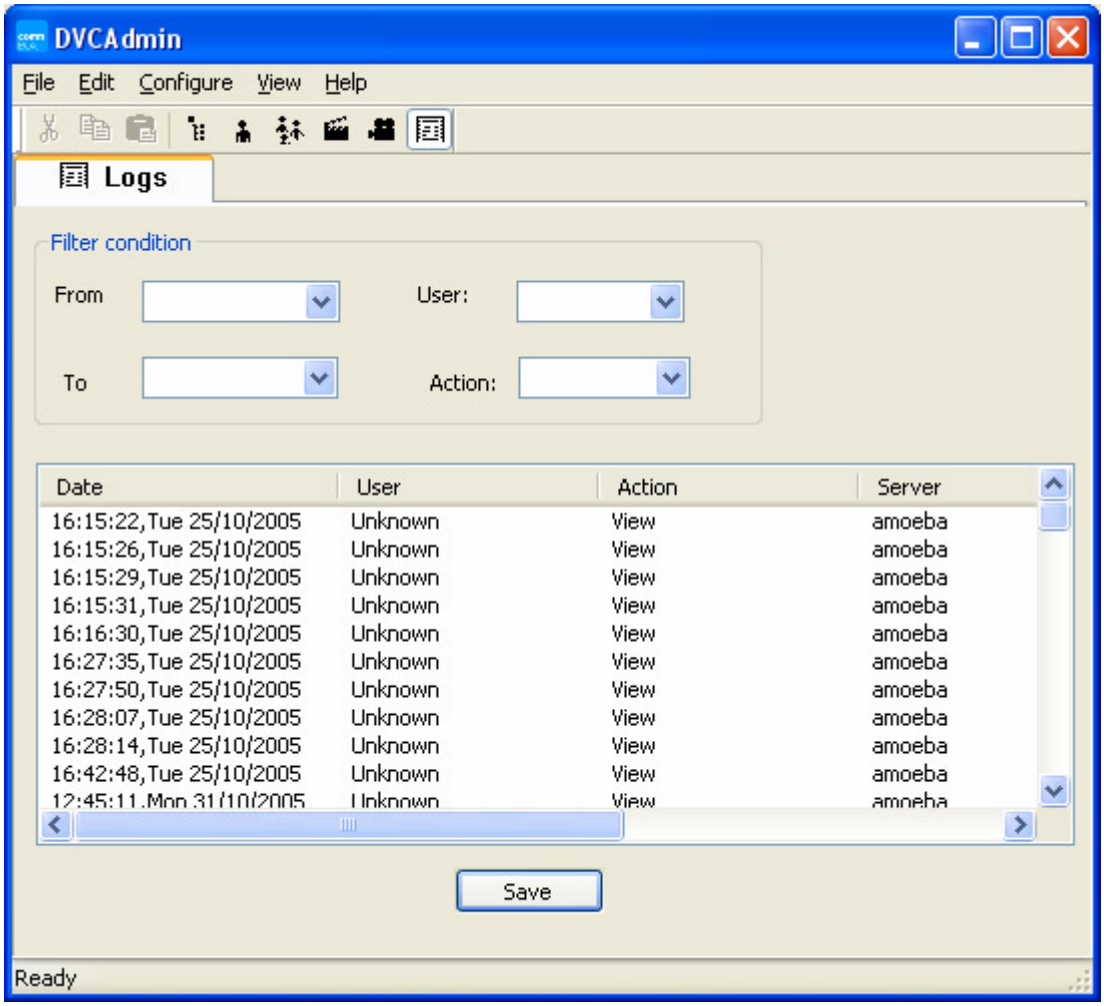


Figure 10 - The Logs Screen

You can use the drop-down lists at the top of the window to filter the list by date, user or action. You can for instance, show only the files viewed by a particular person or only show the files viewed on a certain day.

The **Save** button at the bottom of the window allows you to export the log to a CSV file which can be loaded into a database or spreadsheet such as Microsoft Excel.

Appendix A. Document Revision History

When	Who	What
11-Apr-2005	Adam Pierce	Initial draft.
30-Sep-2005	Adam Pierce	Updated a little in line with version 0.17 of the Admin tool.
10-Oct-2005	Adam Pierce	Added section on capturing.
10-Aug-2006	Adam Pierce	Updated with the latest changes to the Administration tool. Split off the configuration procedures to a separate technical manual.
19-Feb-2007		Gen doc update. V1.2.5

Appendix B. Recording quality and storage

Here is a guideline for disk space usage with the various standard quality presets.

Quality Setting	Bandwidth (millions of bits per second)	Storage required	Description
Basic Quality	2mbps	0.9 GB/hr	For recording VHS tapes or "talking head" TV programmes where picture quality is less important.
Good Quality	4mbps	1.9 GB/hr	Most analogue TV recordings.
Best Quality	8mbps	3.8 GB/hr	Important material where picture quality is important.

Some types of recordings (such as Digital TV recordings) do not have a quality setting since they are already in digital form to begin with.

Appendix C. Glossary

Administration PC

A PC which is running the Administration Tool. It is used to maintain and run the Digital Video Commander System.

Administration Tool

The software which runs on the Administration PC, it allows the A/V operator to control the DVC system for the acquision, storage and management of A/V material.

A/V Operator

The person who is in charge of running the Video Commander system.

Bit rate

The amount of data required per second to transfer media to a replay device. For video this is measured in Mbps or "Megabits per second". Usually the higher quality the stream, the more bits per second it uses although the bit rate also depends on the type of encoding used.

Byte

One byte is eight bits of data.

Capture

The process of converting an analogue signal (audio or video) into a digital stream. This stream can then be stored on disc or transferred across a digital network. This is also known as Digitising.

Capture Card

A device which plugs into a computer and can digitise analogue video signals. Some capture cards also have a TV tuner built in, these are sometimes referred to as Tuner Cards or Input Cards.

Capture Server

The machine responsible for digitising analogue video and also copying from other digital sources such as DVB or DVD.

Digitise

The process of converting something into digital data. In the context of a video system, digitise refers to converting an analogue video signal into a digital stream such as MPEG.

DVB

Acronym for "Digital Video Broadcast. This is a system used by television stations to transmit digital video through the air.

DVB-T
DVB-C
DVB-S

"Digital Video Broadcast Terrestrial" - digital video transmitted over the air
"Digital Video Broadcast Cable" - digital video transmitted by cable TV.
"Digital Video Broadcast Satellite" - digital video transmitted by satellite.

DVC

Acronym for "Digital Video Commander".

DVC Player

A Windows application which simulates the functions of a Media Retriever allowing the user to browse and play material from a PC.

GB

A gigabyte which is equal to 1000 megabytes or eight billion (8,000,000,000) bits of data.

Group

A collection of users who have rights to access a particular collection of material.

Guest

A user of the system who has not yet identified himself by logging in.

MB

A megabyte. This is eight million (8,000,000) bits of data.

Media Repository

A server with a large amount of storage. This is where all the video material is stored.

Media Retriever

Another name for the digital set top box. One of these is connected to the TV in each classroom.

Megabit

A million (1,000,000) bits of data. It is usually used as a measure of communication speed, for example we would say an MPEG-1 stream needs 2 megabits per second.

Metadata

Information about a programme other than its name. For example, running time, genre, censorship rating, subject etc.

MP3

A derivative of the MPEG format for encoding audio-only material.

MPEG

Acronym for the "Moving Pictures Expert Group". Also a family of standards used for coding audio-visual information (e.g., movies, video, music) in a digital compressed format. Consult the MPEG FAQ for more information.

PIN

Acronym for "Personal Identification Number". A secret number used to identify a user to the system.

STB

Acronym for "Set Top Box".

Set Top Box

A device which sits on or near the TV or video projector in a classroom. It contains whatever electronics is necessary to receive and display incoming video material. The set top box also contains an infra red receiver to accept commands from a remote control. May also be abbreviated as "STB".

TB

A lung disease – no wait! Acronym for "terabyte" which is equal to 1000 gigabytes or eight trillion (8,000,000,000,000) bits of data.

Transcode

The act of converting some encoded data to a different encoding. For example, converting MPEG2 encoded video to DivX encoding. Transcoding is usually a computationally intense task which can take a couple of hours or more to convert a full movie.

Tuner Card

A type of capture card which has a TV tuner built in so you can directly digitise TV programmes.

Most analogue tuner cards can also receive FM radio.

Tuner cards are also available for receiving digital broadcast (DVB).